VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please amend the paragraphs beginning at lines 13 and 16 of page 1 as follows:

To obtain a ramp loading system, it is mandatory to have a signal at least proportional to the speed of the motor, in order to have a good control of the positioning of the read/write transducer heads.

In fact the BEMF measurement is compared to a velocity command signal in order to sense deviation of the actual motor ~~actual~~ speed from the desired speed, and in response adjusts the drive applied to the motor to correct for the speed deviation.

Please amend the paragraphs beginning at lines 1 and 4 of page 2 as follows:

A first way of sensing the BEMF is ~~using~~ to use the voltage across the power bridge, that is the driver of the VCM, and the current flowing in the motor to compute the BEMF generated by the motor (continuous mode).

The second approach considers that if the Voice Coil power bridge is put in a tristate condition and the time for a complete current decay in the motor is elapsed, no current is present in the VCM and then the only voltage read across the coil is the back electromotive force (discontinuous mode).

Please amend the paragraphs beginning at lines 10 and 14 of page 2 as follows:

In reality, the BEMF measured across a motor coil is not perfectly proportional to the motor rotational speed. Factors responsible for the imperfection are the motor resistance Rm, the sense resistor Rs and the elements (resistance and amplifiers) used in the measurement circuit.

The measured BEMF, then, can be viewed as the sum of these error components and an ideal BEMF to which the motor rotational speed is proportional.

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Please amend the paragraphs beginning at lines 24 and 26 of page 2 as follows:

~~Are k~~Known circuits are able to accurately ~~measuring~~ measure the BEMF of a VCM but require a double calibration circuit to reduce said measurement error.

In view of the state of the art described, it is an object of the present invention to provide a circuit able to accurately ~~measuring~~ measure the BEMF of a VCM with a single calibration circuit.

Please amend the paragraph beginning at line 20 of page 3 as follows:

~~Tanks~~ Thanks to the present invention, it is possible to provide a circuit able to accurately ~~measuring~~ measure the BEMF of a VCM which is more precise, require less circuits and therefore less space.

Please amend the paragraphs beginning at lines 2 and 21 of page 4 as follows:

Referring now to figure 1, ~~where is shown~~ a power bridge driver of the VCM~~, an~~ is shown where a hard disk controller 10, by means of a digital to analog converter (not shown), ~~supply~~ supplies a signal to the power bridge driver for its ~~working~~ operation. The signal is supplied to the resistance R1 which in turn is connected to a node 11. At the node 11, ~~is connected~~ the inverting input of an error amplifier EA is connected, and the non inverting input is connected to a voltage reference or ground and the output is connected to a node 12. Between the node 11 and 12, ~~are~~ connected in series are a capacitor Cc and a resistance Rc, which they with the error amplifier EA act as an integrator circuit. At the node 12, ~~is also connected~~ the input of the negative power driver 13 is also connected, the output of which is connected to the node Vcm~~;~~. At the node 12, ~~and~~ the input of the positive power driver 14 is connected, the output of which is connected to the node Vcp. A resistance Rs is connected between the node Vcm and a node Vsense. A VCM motor is connected between the node Vcp and the node Vsense. The VCM motor is represented in figure 1 by means of a resistance Rm, an inductor Lm and a voltage generator E, which corresponds to the BEMF voltage. At the node Vcm, ~~is also connected~~ the inverting input of a sensing amplifier SA is also connected, the non inverting input of which is connected to the node Vsense~~;~~. ~~t~~The output of the sensing amplifier SA is connected to a resistance R2, which in turn is connected to the node 11.

The signal coming from the driver controller 10 is supplied to the error amplifier EA and it drives the power drivers 13 and 14~~,~~. ~~t~~The sensing amplifier and the resistance R2 perform a negative feedback of the power bridge driver.

Please amend the paragraph beginning at line 24 of page 5 to line 9 of page 6 as follows:

Referring now to figure 2 where ~~is shown~~ a BEMF detection circuit according to the prior art is shown, there is a VCM motor, a resistance Rs and the nodes Vcp, Vsense and Vcm as in figure 1, but ~~it is not shown~~ the power bridge driver is not shown. The node Vcp is connected to a first resistance R which in turn is connected to a non inverting input of an operational amplifier 20 with the function of summing node. The node Vsense is connected to a second resistance R and to a first resistance Ra, in parallel with the second resistance R, which in turn are connected to an inverting input of the operational amplifier 20. Between the inverting input of the operational amplifier 20 and its output, ~~is connected to~~ a first resistance Rb is connected. The node Vcm is connected to a second resistance Ra which in turn is connected to the non inverting input of the operational amplifier 20. ~~To t~~The non inverting input of the operational amplifier 20 is also connected to a second resistance Rb which in turn is connected to a prefixed bias voltage Vref. The output of the operational amplifier 20 produces the voltage VTACH which is supplied to the hard disk controller 10 by means of an analog to digital converter (not shown).

Please amend the paragraph beginning at line 25 of page 6 to line 11 of page 7 as follows:

We refer now to figure 3 where ~~is shown~~ an embodiment of a BEMF detection circuit according to the present invention is shown. As in figure 2, there is a VCM motor, a resistance Rs and the nodes Vcp, Vsense and Vcm as in figure 1 but ~~it is not shown~~ the power bridge driver is not shown. The node Vcp is connected to a first resistance R which in turn is connected to a non inverting input of an operational amplifier 30 with the function of a summing node. At the non inverting input of the operational amplifier 30 ~~are also connected~~ a first resistance Ra and first resistance Rb are also connected, which in turn are both connected to a prefixed bias voltage Vref. The node Vcm is connected to a second resistance R which in turn is connected to the inverting input of the operational amplifier 30. The node Vsense is connected

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to a non inverting input of an operational amplifier 31 having gain G, and the node Vcm is connected to an inverting input of the operational amplifier 31. The output of the operational amplifier 31 is connected to a terminal of a calibration element Rt that in this case corresponds to the calibration element Rtot. The other terminal of Rt is connected to a prefixed bias voltage Vref.

In the Claims:

Claims 1-4 have been amended as follows:

1. (Amended) A BEMF detection circuit for a voice-coil motor operative to continually generate a signal proportionally to ~~the~~ a velocity of said voice-coil motor, the BEMF detection circuit comprising:

an algebraic summing node ~~producing at its~~ having an output ~~the~~ to produce a BEMF of the voice-coil motor and ~~receiving~~ having:

an input terminal coupled to receive a first voltage proportional to ~~the~~ a voltage across the voice-coil motor;

an input terminal coupled to receive a second voltage representing ~~the~~ a product of a first multiplier factor and a voltage proportional to ~~the~~ a current in ~~the~~ a coil of the voice-coil motor; and

an input terminal coupled to receive a third voltage representing ~~the~~ a product of a prefixed bias voltage Vref and a second multiplier factor; and

~~said third voltage is calibrated by~~ a single calibration ~~circuitry~~ circuit coupled to the algebraic summing node to calibrate said third voltage and operative to calibrate said second multiplier factor in response to a calibration control signal, in order to cancel said second voltage, while the current is in the coil in a continuous mode.